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ABSTRACT

Art education combined with the sciences can be a leading force in raising the consciousness of students and teachers to the needs of our fragile planet. By teaching environmental aspects to the visual arts curriculum, we will also be teaching that one of the similarities we all share is the need for beauty. The sciences have traditionally carried the burden of teaching about the environment and ecological problems, but what seems to have gone unrecognized is the creative brainstorming that often precedes the scientific process. A recent example of creative problem-solving that combines art and science is the design of a tree-top raft created by a French architect. The geometrically designed raft balances on top of the trees in the French Guiana rainforest, thus allowing scientists access to "walk" across the canopy to study plants, insects, and animals in a previously unexplorable area. Art and science can also be merged in a curriculum that includes these approaches: (1) looking at the problem; (2) creative drama and imagining; (3) brainstorming and thinking time; and (4) creating. Three lesson plans are given as suggestions for environmentally aware art and science classes. A list of 13 resources for teaching environmental education is included. (Contains 9 references.) (SLD)

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Art and Environment: An Integrated Study on the Web of Life

by
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Since we are thinkers as well as shapers of the environment, it is important that we become aware of our caretaker position too. A holistic world view emphasizes that the parts are only understandable if viewed in a dynamic relationship among all parts. Through holistic thinking and teaching, we can view ourselves, humanity, as only one of many elements within the Earth's complex and mysterious system.

Science and art have the ability to become great working partners through environmental studies. Curriculums that point to creativity as a resource for scientific problem-solving have not been promoted in most schools. Some educators stress this partnership through general appreciation of scientific rules that apply to art, but that is the minimal approach.

Art education combined with the sciences can be a leading force in raising the consciousness of students and teachers to the needs of our fragile planet. Although science education has led the way with such programs as *Project Wild* (Fleming and Knappe, 1983), the arts can become a partner with science in a new and more holistic way in teaching.

By including environmental aspects to the visual arts curriculum, we will also be teaching that one of the similarities we all share is the need for beauty. The Earth's beauty is a powerful and mysteriously soothing force. As the mathematician Alfred North Whitehead once stated, "After you understand all about the sun, and the stars, and the rotation of the earth, you may still miss the radiance of the sunset." (Grieg, Pike, Selby, 1987).

Dostoyevsky stated that beauty would save the world and it could be true. Beauty could save it because we respond to beauty and the lack of it. When the astronaut Charles M. Duke on Apollo 16 saw the Earth from space, he said, "The Earth is the most beautiful sight in space, with all its colors of land, sea and clouds . . . looking at it against the blackness of space was almost a religious experience for me." (National Geographic, 1972). Through an environmental curriculum and the use of creativity in a partnership with scientific thought, perhaps we can help find much-needed solutions to problems that face us and our environment.

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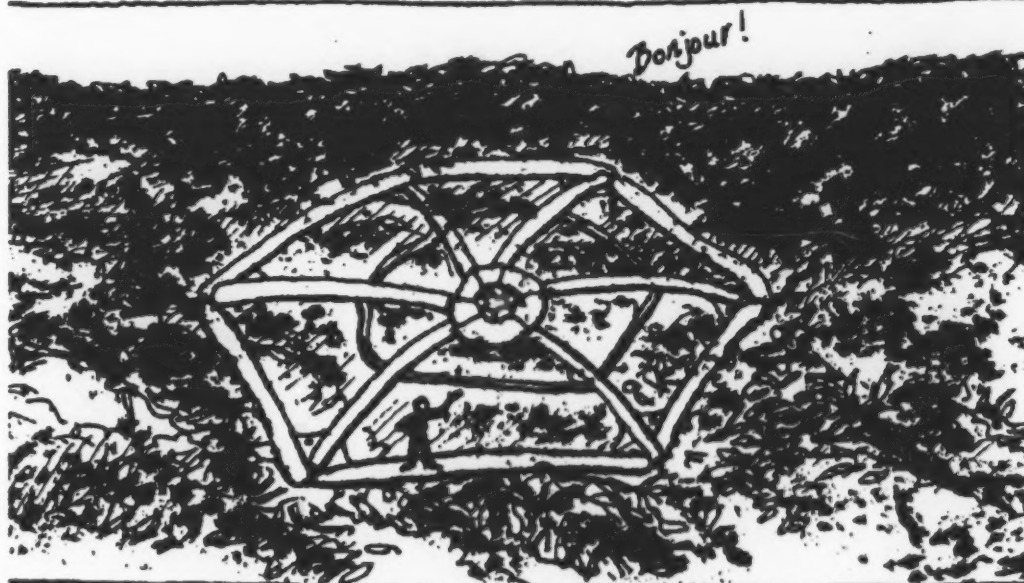
The sciences traditionally carried the burden of teaching about the environmental and ecological problems that are in need of solutions. Art and science seem to be oceans apart at times in how the study of the environment is taught. Science has searched for technical and theoretical answers, and the arts have focused on the aesthetic elements of the Earth. What seems to have gone unrecognized is that to come to answers through science, there first has to be creative brainstorming and, more often than not, even some drawing.

When Archimedes shouted "Eureka!" upon discovering the displacement of volume in water by another weight, he was expressing his triumph through the use of creative problem-solving. Creative discovery lies in finding the universal in the particular.

Creativity in solving problems involves preparation, or the working on the question or puzzle; incubation, or

time to think or play with the ideas; then illumination, or the "aha!" that Archimedes felt at his discovery. These three steps in a creative problem-solving process make possible the refinement of an idea that can lead to a solution that is wonderful for the problem solver.

A recent example of creative problem-solving that combines art and science is the visionary design of a "tree-top raft" created by the French architect, Gilles Ebersolt. The "raft" allowed scientists to study the French Guiana rainforest canopy that had previously been unexplorable. The canopy of the rainforest is fragile and too high for typical ladder supports. The geometrically designed raft balances on top of the trees, thus allowing scientists access to "walk" across the canopy to study plants, insects and animals that live there. The raft was a design that acknowledged the use of creative problem-solving in combining the arts and sciences to overcome a significant barrier to



environmental study (Halle, 1990). How long would the botanists, zoologists and entomologists have taken to make the findings they did without the help of this brilliant artist who was concerned enough with the environment of the rainforests to create the treetop raft?

Heta Kauppinen (1990) said that we inevitably build onto the natural world to make it habitable for humans. Everywhere on Earth we have altered the natural environment. We have made these changes in a harmful and unthinking manner more often than with an understanding of what the implications of these alterations would mean to the earth. Kauppinen also stated that with an emphasis on environmental aesthetics we would design these alterations to be harmonious with the natural world.

Aesthetics alone is not enough, though. Students studying art can benefit by the contributions artists have made to the environment and by studying the use of creative problem-solving to come up with some viable answers to environmental problems. If the environment has suffered, it is not simply because of the failure of science and technology, but also due to a failure to include aesthetics in teaching about the environmental and its connectedness with humanity (Aesthetics and Environmental Education, 1985).

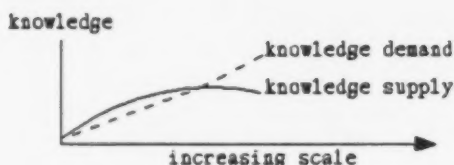
Holistic thinking is the single most important component to environmental education. A raised consciousness about the environment allows growth to come about through aesthetics and creative problem-solving. This approach will allow students to come to

the realization that there is a unity to all life, symbolized by the web, and that they are a real part of the unity. To paraphrase Chief Seattle, if we touch one part of the web, it affects all other parts of the web as well (Vittachi, 1989). Understanding the web of life requires holistic thinking and teaching methods.

Presently the demand for environmental knowledge outstrips our knowledge supply. The learning curve below shows the desire we have to know more, but that new information is not readily available. "Many people who need information do not know that it exists or where to find it." (Margulis and Sagan, 1986).

Environmental Knowledge Supply and Demand

Margulis and Sagan, 1986, p. 97



Teachers are aware that, in facing the changes of the twenty-first century, they and their students are unprepared. Time is needed to allow teachers to prepare lessons that are relevant to the changing world. Developing creative problem-solvers and promoting self-expression through the visual arts are important to our survival in the next century. "The decade of the 90's, less than 4,000 days, is the last window of opportunity." says the director of the United Nations Environmental Program, Dr. Noel Brown (Jones, 1990).

Art and science can be on the same path when the goals revolve around exploring environmental themes. With a partnership and appreciation of each other's gifts, the discipline can make the issues become clearer and the outcomes can build from a stronger base. Students will have a richer variety of information for self-expression and also may find possible solutions to our alarming environmental problems through such an integrated art and science curriculum.

The curriculum can be divided into three areas of study: goals, problems, and approaches. The goals should include:

1. Enriched outlook on the partnership between art and science.
2. Possible solutions to environmental problems through utilization of creativity and science.
3. Confidence in self-expression from a solid base of scientific and creative abilities.
4. Enlightening others through the visual product.

The problems can be grouped as: Land, Water, Air and Population.

The approaches include:

- A. Looking at the problem
- B. Creative Drama/Imagining
- C. Brainstorming/Thinking time
- D. Creating

Our environmental problems are real. Our planet needs therapy from all of us. At Earth Conference One (1989) held at Oxford University there was a joke told about someone falling off the Empire State Building who passes a window waving to those inside and saying: "I'm doing great so far!" (p. 57). The sense of loss about environmental problems is like falling. It seems irreversible. Whatever differences we have about teaching and what to teach in art as well as science, we must come to the realization that we are all part of the whole. Pride can come in knowing that we do our best in trying to incorporate the sense of oneness into the lessons as we become a part of Earth's therapy and healing.

Lesson Plan Idea: #1

CONNECTIONS: CREATIVE THINKER - THE SPIDER

Students will learn about how some spiders have found a way to create ultraviolet (UV) light patterns in their web designs that resemble the UV patterns on many flowers. These patterns may be zigzags, crosses or bars. These designs mimic the same designs found on flowers that do have designs made with UV - reflective and nonreflective centers and petal designs. The UV light which only the sun and sky produce naturally is copied by spiders so that they attract nectar-loving insects that would see these patterns as another flower or a way out to open sky.

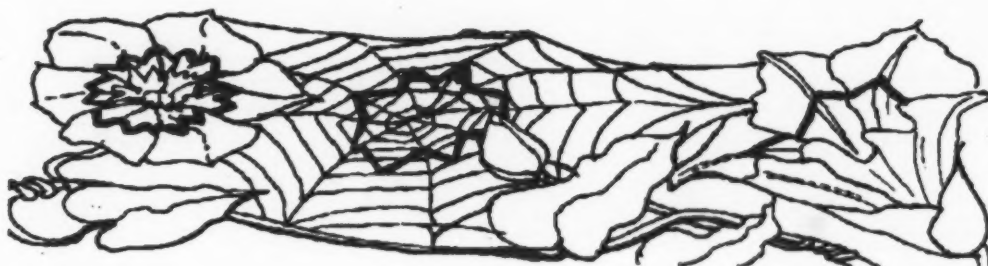
This lesson can lead to creative designs that are done with fluorescent pastels which will be visible under a

blacklight in a similar way that UV light is seen by the nectar-loving insects. Students see how there are connections between species in nature that are subtle and yet help in the survival of a species. The concept of connections will be a good step in holistic thinking for the students.

Further study can then be done in a discussion on ozone depletion and the increased ultraviolet radiation levels resulting from this depletion. Students can do brainstorming and webbing to come up with parts of the problem: What are the main causes of ozone depletion? What steps are being done to stop it? What further steps can be taken to aid the situation?

Students can work on designs for ozone protection in the forms related to clothing and architecture as two examples. Cleaner transportation is another idea. Starting "small" by beginning the study with UV connections between spiders and insects and flowers helps with holistic thinking. This in turn helps expand the thinking so that students can begin to use creative thinking abilities in coming up with inventive ideas about ozone and ultraviolet radiation problems.

Idea from "Spider Trompe l'oeuil" in *Science* (1990)



Lesson Plan Idea: #2

CREATING A SOLAR HEATED DOGHOUSE

Students will use creative drama exercises to imagine being a dog, walking and resting in a dog house, picturing their environment and weather. From these imagining exercises they can expand their thoughts to see a more real image of the

environment, the needs of the dog and how the house should look and function. The teacher can give the class basic information on what solar energy is and what materials would be used for this project.

Students can then create drawings and finally three-dimensional designs for the dog house.

Evaluation can come in the form of

discussion among the students who get to see all the designs they came up with.

As an extra activity they could work as a group in creating a life-size model from one design they all agree is workable.

Another activity could be designing solar shelters for zoo animals. Since zoos are in many different geographical locations, they each may have specific needs for exotic species.

The Solar Doghouse

On warm days:

- vent the plexiglass roof window
- turn wall shutters to the white side
- put shade down over water-filled jugs used for solar heat
- tree leaves shade the house
- oriented to use the sun best at different seasons



Lesson Plan Idea: #3

RAINFOREST SIMULATION

Students are divided into groups of five or six. Each group is given an identity:

1. Forestwatch Environmental Society
2. Burgers-for-you Company
3. Government Resettlement Program Team
4. Kokopano Tribe
5. Infor Timber Company
6. Mediplants, Inc.

The teacher/facilitator leads the group through the simulation.

Simulation can begin with creative drama: imagining walking through a rainforest, with all the details that can help in stimulating creative thinking. Students can discuss as a group what each of them saw, heard and felt. They will probably be surprised at the variety of images and thoughts from each other.

The room will be set up with a "rainforest" which is in the center of the room, made of 75 paper cups. During the simulation exercises, every five minutes each group which has a timber quota will gather their number of "trees" or hold mini-conferences with other groups to discuss cut-backs.

Each group will be given cards with

information relevant to their group. From these facts, they will have fifteen minutes to discuss their needs and ways to help save the rainforest. They will each send one member of the group to speak to the International Conference on Saving the Rainforest. The teacher will be the representative from this group and will listen to each speaker.

Afterwards the teacher can lead the groups in a discussion about this lesson:

What did those working in the forest think about the ones who lived there?

How did the Kokopano people feel about "outsiders" in the forest?

What was the attitude of each group towards conservation?

What would have happened to the rainforest if we continued for another 1/2 hour?

Who should protect the rainforest?

What steps should be taken to prevent the destruction?

What might be the long-term consequences of this destructions for the forest people? For the world?

This type of simulation and creative drama helps students to see the many complex parts that are interconnected within an issue. Holistic thinking is better understood. Other lessons can be developed from this one: a series of posters with a theme of saving rainforests; a comic book on plants from rainforests that save lives; or a

series of paintings that deal with one aspect of the forest and its life. Idea from *Global Teacher/Global Learner* (1990).

EXAMPLES OF ART THAT MAKE A DIFFERENCE

POSTERS: for organizations, advertising for companies, art shows, artists

STORY BOARDS: for videos - live or animated, advertising, short films, self expression, or documentaries.

CARTOONS/COMIC BOOKS: comic, ironic, serious messages

BUMPER STICKERS, BUTTONS, T-SHIRTS, STICKERS: all for a cause that has a strong view

INVENTIONS: all for a good cause

Small groups of students can choose an issue: water pollution, for example. They then can be given a choice of art to make a difference and decide on who does what part of the job. Some students may be best at lettering, some as landscapers or figure artists. Students can choose to work in small groups or as an individual artist on some assignments.

Drama Creation:

Students can become objects in small groups, such as an air pollution control device, or a water purifying machine. Or students can take imaginary trips to many lands or places of concern to the environment. They can float above a site or become part of

it by becoming a speck of dust or microbe. Creative drama allows them to explore by using the imagination.

Brain Exercise:

Students can use ideas such as those in *Mindglow* to help them expand their thinking capabilities. Webbing ideas from a central idea out to many sub-ideas is one way. Putting unrelated elements together is another. For example:

What is the color of drought?
What is the sound of pollution?
What is the smell of acid rain?

Evaluating:

For students and teachers to discuss:

Did you give people information they could understand? Has anyone's outlook or attitude changed because of the work? Is the issue more understandable to you now?

References

Aesthetics and Environmental Education. (1985). Madison, WI: Wisconsin Dept. of Public Schools.

Apollo 16 Brings Us Visions from Space. (Dec. 1972). *National Geographic*. Vol. 152, #6, p. 865.

Fleming, L.J. and Knape, B.J. (1983). (Rev. ed.) *Project Wild*. Harrisburg, PA: Pennsylvania Game Commission.

Grieg, S., Pike, G., and Selby, D. (1987). *Earth Rights*. London: World Wildlife Fund.

Halle, Francis (Oct, 1990). A raft atop the rainforest. *National Geographic*. Vol. 178, #4. pp. 129-38.

Jones, T.K. (July, 1990). *Life on Earth, Nasty, Brutish, Short?* M, pp. 56-67.

Kauppinen, Heta (July 1990). Environmental Aesthetics and Art Education. *Art Education*. pp. 12-21.

Margulis, L.M. and Sagan, D. (1986). *Microcosmos: Four Billion Years of Evolution from our Microbial Ancestors*. New York: Summit Books.

Vittachi, A. (Ed.) (1989). *Earth Conference One: Sharing a Vision for Our Planet*. Boston, MA: New Science Library.

Selected Resources For Teaching Environmental Education

The Arts:

Cannell, G. (1984). *Experiencing Architecture: Focus on Pittsburgh*. Pittsburgh, PA: University of Pittsburgh Press.

Hollowell, Bay. (1988). *Art Express School/Museum Resource Book*. Pittsburgh, PA: The Carnegie.

McCaslin, N. (1990). (4th Ed.). *Creative Drama in the Classroom*. White Plains, NY: Addison-Wesley Pub. Co., Inc.

Rudner, R. (Sept./Oct. 1990). The Art of Nature. *Buzzworm*. pp. 59-73

Schwartzman, A. (1985). *Street Art*. New York: Doubleday.

Wilson, J.D. (1986). *A Naturalist's Teaching Manual*. London: Prentice-Hall.

The Sciences:

Erlich, A. & Erlich, P. (1987). *Earth*. New York: Franklin Watts.

McHarz, Ian L. (1971). *Design with Nature*. New York: Museum of Natural History.

Melcher, J. (1980). *Connections: A Curriculum in Appropriate Technology for 5th and 6th Grades*. Butte, MT: National Center for Appropriate Technology.

Pearson, D. (1989). *The Natural House Book*. New York: Simon & Schuster.

Pike, G., & Selby, D. (1990). *Global Teacher, Global Learner*. London: Hoder & Stoughton.

Spider Trompe l'oeuil (July 1990). *Science*. Vol. 249, No. 4967, p. 359.

Stanish, B. (1986). *Mindglow*. Carthage, IL: Good Apple, Inc.